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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHRISTOPH SCHWEMLER,
JURGEN HEUSER, HERMANN KAUTH,
CHRISTIAN KORDS, OTTO HORAK,
and FRITZ GESTERMANN

Appeal 2009-000248
Application 10/009,909
Technology Center 1700

Decided: August 27, 2009

Before CATHERINE Q. TIMM, KAREN M. HASTINGS, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 11 through 14 and 16 through 20, which are all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6.

We AFFIRM.

STATEMENT OF THE CASE

The subject matter on appeal is directed to, *inter alia*, a process for decomposing organic compounds present in waste water. Claim 19 is illustrative:

19. A process for decomposing organic compounds present in waste water comprising

(i) obtaining waste water having content of TOC compounds greater than 2 ppm, and pH lower than 7 containing at least 0.1 wt.% of dissolved carbonic acid or carbonates and 2 to 20 wt.% common salt, and

(ii) treating the waste water with ozone at 10 to 130°C, at absolute pressure of 0.5 to 3 bar, and over a period of 1 minute to 10 hours and

(iii) obtaining water having TOC lower than 1 ppm and pH greater than 7.5.

As evidence of unpatentability of the claimed subject matter, the Examiner relies upon the following references:

| | | |
|-------|--------------|---------------------------|
| Brown | US 3,952,088 | Apr. 20, 1976 |
| Nanba | JP 58-166987 | Oct. 3, 1983 ¹ |
| Silva | US 6,103,092 | Aug. 15, 2000 |

The Examiner maintains the following rejections:

1) Claims 11, 12, 14, and 19 under 35 U.S.C. § 103(a) as unpatentable over Brown and Nanba; and

2) Claims 13 and 16-20² under 35 U.S.C. § 103(a) as unpatentable over Brown and Nanba as above and further in view of Silva.

¹ Our reference to Nanba is to the translation of JP 58-166987 prepared for the U.S. Patent and Trademark Office by Schreiber Translation, Inc. (PTO 09-5386, May 2009). Moreover, since Appellants and the Examiner refer to this reference as Nanba, we do the same.

With respect to rejection (1), Appellants direct their arguments to claim 19. Accordingly, we select claim 19. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2009).

With respect to rejection (2), Appellants provide no additional argument for the rejection of claims 13 and 16-20. Instead, Appellants refer to the arguments they made for rejection (1). (Br. 5). Therefore, the Examiner's rejection of claims 13 and 16-20 stand or fall with respect to our analysis of claim 19 in rejection (1).

REJECTION (1)

ISSUES

The issues are the following: (1) Have Appellants shown reversible error in the Examiner's determination that the combined teachings of Brown and Nanba teach or would have suggested that the waste water's pH is lower than 7 before the ozone treatment step as required by claim 19? (2) Have Appellants shown reversible error in the Examiner's determination that the combined teachings of Brown and Nanba teach or would have suggested that the water's pH is greater than 7.5 after the ozone treatment step as required by claim 19? and (3) Have Appellants shown reversible error in the Examiner's reason for combining Brown and Nanba within the meaning of § 103(a)?

We decide these issues in the negative.

² We determine that the Examiner's inadvertent omission of claim 19, from which claim 13 depends, in the statement of rejection is harmless error. We also determine that the Examiner's rejection of claim 15 is harmless error since it is apparent from the record that this claim has been canceled.

FINDINGS OF FACT (FF)

1. Appellants do not dispute the Examiner's finding that Brown teaches all of the features recited in claim 19, except for the composition and pH of the waste water before and after the ozone treatment. (*Compare* Ans. 3-8 *with* Br. 2-6). Nor do Appellants dispute the Examiner's determination that the recited composition of the water before and after the ozone treatment is "within the purview of ordinary artisan." *Id.* In this regard, Brown teaches reducing the organic carbon content in an aqueous effluent via a two-step treatment: (1) treating the aqueous effluent, which has a pH of around 13, with ozone and (2) "bring[ing] the pH of the ozonised effluent [pH] to about 7" and then treating the aqueous effluent with chlorine. (Brown, col. 1, ll. 3-8 and col. 1, l. 63 to col. 2, l. 48). Brown teaches that ozone treatment alone removes "three specific compounds . . . but very little else." (Brown, col. 1, ll. 22-27 and col. 2, ll. 40-48). In one example, Brown teaches that using an ozone treatment alone, while reducing the organic carbon content from 862 ppm to 260 ppm, increases the carbonate content of the effluent from 36 ppm to 660 ppm. (Brown, col. 4, ll. 12-22). Brown is silent regarding the aqueous effluent having a pH lower than 7 prior to the ozone treatment.
2. Nanba teaches a method of removing organic substances from wastewater via a hydrogen peroxide-added ozone treatment method comprising the steps of lowering the pH of the untreated wastewater to not higher than 4.5 so that most of the dissolved carbonate radicals form carbonic acid; aerating the wastewater with air such that "the dissolved carbonate level becomes lowered to a value, which is almost [in]

- equilibrium with the carbon dioxide gas in the air"; re-adjusting the pH of the water to 6 to 8; and performing the ozone treatment using hydrogen peroxide to remove organic substances. (Nanba, pp. 7-10).
3. Nanba teaches that "organic substances that could not be removed at all by conventional ozone treatments can be removed by ozone treatment using hydrogen peroxide together." (Nanba, p. 6).
 4. Nanba states that
[i]f dissolved carbonate radicals such as carbonate ions or bicarbonate ions are contained in untreated wastewater in a large amount, ozone and hydrogen peroxide are wastefully consumed. . . . [if] bicarbonate radicals are contained as inorganic carbons in untreated water, 1.5 times the amount of ozone and 3 times the amount of hydrogen peroxide, which are required when bicarbonate radicals are not contained, to remove the same amount of TOC [total organic carbons].
(Nanba, pp. 7-8).

PRINCIPLE OF LAW

In cases where a claimed composition is very close to a prior art composition, one skilled in the art would have expected the compositions to have the same properties such that the claimed composition would have been obvious. *Titanium Metals v. Banner*, 778 F.2d 775, 783 (Fed. Cir. 1985).

ANALYSES AND CONCLUSIONS

ISSUES (1) and (3)

Appellants argue that "nothing in the record suggests combining Brown's process . . . with Nanba['s]." (Br. 4). In addition, Appellants argue that "[n]othing in the cited art disclosed pH value of [the waste water to be] less

than 7 before treatment with ozone . . ." (Br. 4). We disagree with both arguments.

In reference to the above factual findings (FF 1-4), we, like the Examiner (Ans. 3-7), determine that one having ordinary skill in the art would have been led to substitute Nanba's hydrogen peroxide-added ozone treatment method for Brown's ozone treatment (i.e., Brown's step (1)). In making such a substitution, one of ordinary skill would have a reasonable expectation of removing organic substances that could not be removed by conventional ozone treatments and also removing dissolved carbonate radicals in the waste water in order to prevent the wasteful consumption of ozone and hydrogen peroxide during the ozone treatment using hydrogen peroxide. Moreover, we note that this hydrogen peroxide-added ozone treatment method uses wastewater having a pH of not higher than 4.5 (lower than 7) prior to performing the ozone treatment using hydrogen peroxide. (FF 2).

Thus, it follows that Appellants have not shown reversible error in the Examiner's determination that the combined teachings of Brown and Nanba teach or would have suggested that the waste water's pH is lower than 7 before the ozone treatment step as required by claim 19. Nor have Appellants shown reversible error in the Examiner's reason for combining Brown and Nanba within the meaning of § 103(a).

ISSUE (2)

Appellants argue that "[n]othing in the cited art disclosed [a] pH value of [the water to be] higher than 7.5 after . . . [the ozone] treatment." (Br. 4). We disagree.

In reference to our above discussion regarding the combination of Brown and Nanba, Brown teaches (FF 1) "bring[ing] the ozonised effluent [pH] to about 7" as part of its chlorine treatment step (2), which occurs after the hydrogen peroxide-added ozone treatment method suggested by the combination of Brown and Nanba. Thus, we determine that Brown would have suggested to one of ordinary skill in the art to employ a pH of greater than 7.5 after the ozone treatment step within the meaning of 35 U.S.C. § 103(a). *See Titanium*, 778 F.2d at 783.

Thus, it follows that Appellants have not shown reversible error in the Examiner's determination that the combined teachings of Brown and Nanba teach or would have suggested the water's pH is greater than 7.5 after the ozone treatment step as required by claim 19.

Accordingly, based on the factual findings and legal conclusions set forth in the Answer and above, we sustain the Examiner's rejection of claims 11, 12, 14, and 19.

ORDER

In summary, all of the rejections made by the Examiner are sustained. Accordingly, the Examiner's decision is affirmed.

TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2009).

AFFIRMED

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Application 10/009,909

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